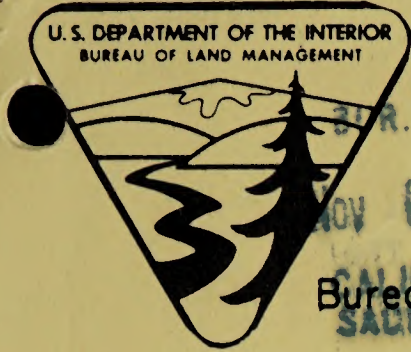


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# TECHNICAL NOTE

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Bureau of Land Management U.S. DEPARTMENT OF THE INTERIOR

Subject: Sources of Mining Cost Data

## Surface Operations

The Highway Departments in the various states put out compilations of equipment rental rates. These are in various forms e.g., Colorado issues a Construction Equipment Rental Rate Manual; California issues a list of rental rates with each highway contract offer. The rates are updated as necessary - every year or so. Copies of these rental rate compilations are usually available upon request.

Typically these rates are state-wide, for large projects and assume the specific equipment is at the job. Thus, adjustments may be necessary to allow for local conditions, scale of operations and procurement (move-in) costs.

It must be determined upon what basis the rental rates are figured with or without operator, allowance for profit, time, maintenance, etc.

Since these rates are on an hourly basis, adjustment may be necessary to provide for extended operations. Usually the daily rate is eight times the hourly rate, the weekly rate three times the daily and the monthly rate three times the weekly.

If the operation is to be long term (over a year) or continual, the equipment would probably be purchased rather than rented. In these situations the equipment of the proposed operation should be capitalized and figured on an actual cost of (1) ownership, (2) direct operating costs and (3) indirect costs.

Local dealers in heavy construction equipment will often supply data as to cost of equipment, allowance for maintenance and repair, fuel requirements, productive capacity and rate of depreciation.

NOTE: On heavy equipment tires are usually figured separately and may be a major operating expense.

Caterpillar Tractor Company, Peoria, Illinois, puts out an informative booklet, FUNDAMENTALS OF EARTHMOVING (free on request). The attached forms, showing calculations of equipment costs, are adapted from their data.

Please send any additional references on this subject or other minerals subjects to DSC (D-310). If the complete article or publication is needed, DSC (D-310) will attempt to obtain a copy or a loan for you.

# HOURLY OWNING & OPERATING COST ESTIMATE WORK SHEET

Machine: D9E (Tire Size) ---

Attachments: Cushion pushin

Delivered Price ..... \$ 44,945  
 Approximate Tire Replacement Cost ..... \$ --  
 Depreciation Value (Delivered Price Less Tires) ..... \$ 44,945  
 Depreciation Period ..... Years 5 Hours 10,000

## OWNING COSTS

- Depreciation: Dep. Val. 44,945 ÷ Ser. Life, Hrs 10,000 ..... \$ 4.49
- Int., Ins., Taxes: \$.03 x Del. Price 44,945 ÷ 1000 ..... 1.35
- Total Hourly Owing Cost ..... \$ 5.84

## OPERATING COSTS

- Fuels and Lubricants:
  - Diesel Fuel: 14.9 gph x \$ .15 per gal. .... 2.24
  - Gasoline (start & clean): \$.03 per hour ..... .03
  - Lube Oil, crankcase: .14 gph x \$ 1.00 per gal. .... .14
  - Lube Oil, trans. & fin. dr.: .04 gph x \$ 1.00 per gal. .... .04
  - Hyd. Oil, ~~steering~~ .01 gph x \$ 1.00 per gal. .... .01
  - Filters: \$ --- replace. cost ÷ --- hrs. (oil change period) ..... .06
  - Grease: --- lbs./hr. x \$ --- per lb. .... --
- Repairs (including labor): 90 % x hourly dep. cost ..... 4.04
- Tires: replace. cost \$ --- ÷ tire life (hrs.) --- ..... ---
- Total Hourly Operating Cost ..... \$ 6.56

OPERATOR'S WAGE ..... 3.00

**TOTAL HOURLY OWNING AND OPERATING COST ..... \$ 15.40**

# ESTIMATING HOURLY OWNING AND OPERATING COSTS

MACHINE PRICE INCL. ATTACHMENTS, DELIVERED: \_\_\_\_\_ MODEL 631B # 78,000

- LESS TIRE REPLACEMENT COST:

FRONT: \_\_\_\_\_  
 DRIVE: 2 4500  
 REAR: 2 1500

TOTAL TIRE REPLACEMENT COST: 1000

- LESS RESALE OR TRADE-IN VALUE (OPTIONAL) 14700

- NET VALUE FOR DEPRECIATION: (15% residual) 73000

### OWNING COSTS

**1** DEPRECIATION:  $\frac{\text{NET DEPRECIATION VALUE}}{\text{DEPRECIATION PERIOD IN HOURS}} = \frac{73000}{10000} = 7.30$

**2** INTEREST, INSURANCE, TAXES:  
 ANNUAL RATES: INT. 7%, INS. 75%, TAXES 1%

ESTIMATED ANNUAL USE: 2000 HOURS

FACTOR X DELIVERED PRICE =  $\frac{\text{FACTOR} \times \text{PRICE}}{1000} = \frac{20 \times 89000}{1000} = 2200$

### TOTAL OWNING COSTS

### OPERATING COSTS

**3** FUEL:  $\frac{\text{CONSUMPTION}}{\text{UNIT COST}} = \frac{12}{15} = 0.80$

**4** LUBRICANTS, FILTERS, GREASE:  
 CONSUMPTION X UNIT COST = TOTAL

ENGINE	_____	X	_____	=	_____
TRANSMISSION	_____	X	_____	=	_____
FINAL DRIVES	_____	X	_____	=	_____
HYDRAULICS	_____	X	_____	=	_____
GREASE	_____	X	_____	=	_____
FILTERS	_____	X	_____	=	_____

} 50  
} 10

LUBRICANTS, FILTERS, GREASE SUB-TOTAL 60

**5** TIRES:  $\frac{\text{REPLACEMENT COST}}{\text{ESTIMATED LIFE}} = \frac{9000}{3000 \text{ hrs}} = 3.00$

**6** REPAIRS:  $\frac{\text{REPAIR FACTOR X DELIVERED PRICE}}{1000} = \frac{70 \times 89000}{1000} = 6130$

**7** SPECIAL ITEMS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SPECIAL ITEMS SUB-TOTAL 0

### TOTAL OPERATING COSTS

**8** OPERATOR'S HOURLY WAGE \_\_\_\_\_  
 TOTAL HOURLY OWNING AND OPERATING COSTS 21.07